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10/708,941

04/02/2004

Ti-Wen Yuan

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EXAMINER

SINGH, HIRDEPAL

ART UNIT

PAPER NUMBER

2609

| SHORTENED STATUTORY PERIOD OF RESPONSE | NOTIFICATION DATE | DELIVERY MODE |
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3 MONTHS

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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 04/13/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/708,941

Applicant(s)

YUAN ET AL.

Examiner

Hirdepal Singh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 April 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

This action is in response to the original filing date of April 2, 2004. Claims 1-27 are pending and have been considered below.

Specification

1. The disclosure is objected to because of the following informalities: the examiner notes the use of acronyms GSM, SACCH (paragraph 0005, lines 2-3), and GPRS (paragraph 0028, line 3) without first including a description in the plain text.

Appropriate correction is required.

2. The disclosure is objected to because of the following informalities: in paragraph 0019 line 3, "digital signal processing module 8 to estimate", however in figure 2 digital signal processing module is described as "16". It seems like a typographical error.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 8, 9, 10, 17, 18, 19, 26, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Stoter et al. (US 2003/0026363).

Claims 1, 10, and 19: Stoter discloses an Automatic Gain Control method and apparatus for a wireless receiver receiving plurality of data blocks where the transmitted data is in discontinuous (Time Discrete Multiple Access) mode (abstract; paragraphs 0003, 0046) comprising;

- a. receiving frames of the signal block, down converting to base band adjusting the value of amplifier by changing the gain depending on the power of the received base band signal (paragraph 0035; paragraph 0036, lines 13-20; figure 3);

- b. determining if the signal block is in discontinuous transmission or rapidly changing mode then using the gain value of the AGC based upon the previous frame (paragraphs 0031, 0043, 0046).

Claims 8, 17, and 26: Stoter discloses an Automatic Gain Control method and apparatus for a wireless receiver as in claims 1, 10, and 19 above, and further discloses that the power of the input base band signal is compared with a desired/target power level, the gain is increased if the power of input base band signal is less than the desired/target power level and vice versa (figure 4; paragraphs 0036-0037).

Claims 9, 18, and 27: Stoter discloses an Automatic Gain Control method and apparatus for a wireless receiver as in claims 8, 10, and 19 above, and further discloses

that the input signal after down conversion to base band signal is fed to analog to digital converter in the wireless receiver (figure 3; paragraph 0035).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2, 4, 5, 7, 11, 13, 14, 16, 20, 22, 23, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stoter et al. (US 2003/0026363) in view of Ruohonen (US 2002/0163980).

Claims 2, 11, and 20: Stoter discloses an Automatic Gain Control method and apparatus for a wireless receiver as in claims 1, 10, and 19 above, but doesn't explicitly disclose that the transmitter is transmitting the RF signal in frequency hopping manner and the first, second, and third frames corresponds to same frequency channel.

Ruohonen discloses a similar Automatic Gain Control method and apparatus for a wireless receiver having discontinuous transmission and further discloses that the transmission is in a frequency hopping manner where the transmitted signal has the information about frequency used by the cell/network, surrounding cells, frequency.

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hopping etc. (abstract; paragraph 0006; paragraph 0007, lines 5-10). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the frequency hopping in the transmitting radio signals in Stoter by switching a carrier among different frequency channels. One would have been motivated to use frequency hopping for transmitting radio signals for making it resistant to noise or interference.

Claims 4, 5, 7, 13, 14, 16, 22, 23, and 25: Stoter discloses an Automatic Gain Control method and apparatus for a wireless receiver as in claims 1, 10, and 19 above, but doesn't explicitly disclose that the signal power level is used as a quality metric to decide if the frame is valid (if quality metric/signal power is greater than a predefined value) to decide whether the signal block is in continuous (valid frames greater than or equal to a predefined number) or discontinuous transmission mode. Ruohonen discloses a similar Automatic Gain Control method and apparatus for a wireless receiver having discontinuous transmission and further discloses that depending on valid frames with reliable estimate of received signal strength in a signal block, the gain of AGC is controlled (abstract; paragraphs 0021, 0023). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the signal power/strength to estimate the valid frames and then decide depending on number of these valid frames whether the signal block is in discontinuous mode or not. One would have been motivated to make use of number of valid frames to decide a

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discontinuous signal block for adjusting the gain of the automatic gain controller to accommodate sharp changes in the received signal.

7. Claims 3, 12, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stoter et al. (US 2003/0026363) in view of Cahill (US 5,083,304).

Claims 3, 12, and 21: Stoter discloses an Automatic Gain Control method and apparatus for a wireless receiver as in claims 1, 10, and 19 above, but doesn't explicitly disclose that the transmitter is transmitting the RF signal with single channel frequency and second frame is sent immediately after first and third frame is last frame in third signal block. However, Cahill discloses a similar Automatic Gain Control method and apparatus for a wireless receiver having discontinuous transmission and further discloses that the transmitter is transmitting signal using single channel (abstract; column 1, lines 35-58). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the single channel to send RF signals in Stoter. One would have been motivated to use single channel for transmitter to transmit radio signals to make it useful for the systems using dedicated bandwidth and to keep the system simple and reliable.

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8. Claims 6, 15, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stoter et al. (US 2003/0026363) in view of Ruohonen (US 2002/0163980) in further view of Abramsky et al (US 6,052,566).

Claims 6, 15, and 24: Stoter and Ruohonen disclose an Automatic Gain Control method and apparatus for a wireless receiver as in claims 5, 14, and 23 above, but neither explicitly discloses that signal to noise ratio of the signal frame is used to make a quality metric to decide whether or not a block is in discontinuous mode to adjust the gain. However, Abramsky discloses a similar method for Automatic gain control of wireless receivers, and further discloses that signal to noise ratio is used to adjust the gain of automatic gain controller and the controller uses a viterbi metric to estimate the signal to noise ratio of the signal (abstract; column 6, lines 54-68, and column 7, 1-12).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the signal to noise ratio metric for estimating the noise in the signal frames to adjust the gain of the automatic gain controller in Stoter. One would have been motivated to adjust the automatic gain controller output according to the signal to noise ratio of the signal frames to make the gain more accurate and within the dynamic range of the receiver.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Higure (US 2001/0055350) discloses a method and circuit for automatic gain control of radio receivers where the gain is adjusted depending on the received signal.

b. Heinonen et al. (US 2003/0194029) discloses a method and apparatus for automatic gain control in wireless receivers, the gain is adjusted based on the signal level and signal to noise ratio (SNR).

c. Hill (US 3,934,204) discloses an automatic gain controlling method using signal strength, and signal to noise ratio (SNR) as the deciding factors.

d. Arens et al. (US 5,301,364) discloses a method and apparatus for automatic gain control in receivers where the gain is controlled comparing the received signal with a desired signal level.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hirdepal Singh whose telephone number is 571-270-

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1688. The examiner can normally be reached on Mon-Fri (Alternate Friday Off) 8:00AM-5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Myhre can be reached on 571-272-6722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HS
April 2, 2007


James W. Myhre
Supervisory Primary Examiner